**The Psychology of Environmental Problems: Behaviorism, Cognitive Schemas, Expectancy Value theory, and Cognitive Maps**

Psychology has clearly identified the factors associated with increasing and decreasing the incidence of behaviors. The following lecture outlines what we know about changing behavior, known as “learning theory” in psychology. It has applications to the behaviors that increase environmental problems and the ingredients needed to change those behaviors. Much of the material in this lecture has been presented in our textbook in various chapters. This is an attempt to organize it for our application at the end of this course. Think about the applications to a specific environmental problem as you read this. (E.g. global warming, waste of resources, recycling, marketing fuel efficient cars, increasing our use of public transportation in place of driving cars, reducing energy use)

**How we learn the behaviors we perform**

**1. Reinforcers and punishers shape behavior**. A positive reinforcer is a reward and we tend to do the things that lead to rewards. Rewards provide incentive for us to perform the behaviors that lead to the rewards. In psychology we call behavior that is energized toward a goal “motivated” behavior. If I get punished when I do a behavior, I am less likely to perform that behavior unless the behavior is basically rewarding to perform and I can find a way around the punishment. For example, teenagers have been trying to find ways to stay out later than parents prefer for eons because there are fun things to do late at night with friends. If a teenager can find a way around the punishment parents will impose for staying out late, he/she is likely to stay out later than the rules permit. It might require a certain way of asking, or being extra helpful around the house for the week, or lying about being detained somewhere, or even slipping in unannounced and lying about being home on time but just not seen by the parents. What ever works is likely to be tried if it allows the rewards to be attained and the punishment avoided. Driving over the speed limit feels good and saves time when rushed. These are rewards intrinsic to speeding that no amount of punishment can diminish; punishment can only suppress the speeding behavior until one believes the punishment is not likely to be received. Hence, there is a market for radar detectors.

**We tend to select short-term rewards over long-term rewards**

Another example is that most of us have tried to experience sexual pleasure and avoid an undesired outcome like pregnancy or a sexually transmitted disease (STD). We may even risk one of the “punishing” outcomes in order to have the good sexual feelings, leading to the U.S. having a very high rate of adolescent pregnancy and STD’s compared to the rest of the world. Education about sexual behavior, pregnancy, and STD’s may help us, and improved technology for “safer sex” may help us if we know how to use it and are able to obtain it. However, sometimes we just impulsively do want feels good regardless of the consequences and our knowledge of them. Education helps but sometimes it is not enough, as we earned in Chapters 4 through 7. The behavior of using contraceptives to prevent pregnancy or STD is “negatively reinforced”. We perform the behavior of using a contraceptive because it prevents the undesired outcome, or punishment for the behavior, not because contraceptives feel so good. They have little reward value of their own; they merely reduce the likelihood of a negative outcome of punisher being experienced by our pursuit of the positive reinforcer of sexual pleasure. One elderly Native American man I knew in North Dakota said using a condom was like trying to scratch your feet with your socks on.

**Associative learning**

Some learning occurs through pairing two things together when one of them already elicits a response. The new stimulus will take on the power of the first stimulus to elicit the same behavior under certain conditions as illustrated in the **Classical Conditioning** section of the text describing Pavlov's dog salivating to the sound of a bell after the bell preceded the presentation of food several times. This is better called **"associative conditioning"** because two stimuli are associated with each other. This is a passive form of learning as the organism does not do anything other than observe the pairing of the stimuli. A second type of learning involves becoming an active participant in making things happen. One learns that a behavior produces a desired result, either by making something positive happen, or preventing something negative from happening. Such behaviors can be chained together to produce very complex patterns of behavior that lead to a reinforcer, such as the circus animal that does amazingly complex stunts for only a quick piece of food, or a pat on the head from the trainer. This is called **operant conditioning or instrumental conditioning**.

**Observational learning**

A third form of learning involves observing another person performing a behavior that leads to a reinforcer for that person, called **modeling**. This person becomes a model for another person who then performs the same behavior without ever having been reinforced for it previously. This form of learning is especially important for humans. We are the greatest "monkey see, monkey do" animals of all. How far this carries over to our imitating what we see on TV, movies, and video games is the subject of much research and controversy in our society. An effective model is one who seems like someone we want to emulate because he/she has characteristics we admire like physical attractiveness, success, fame, fortune, status, or lovers. We also have to believe that the model’s demonstrated behavior is possible for us to achieve. Spiderman’s super-heroics is a powerful model for young children, but so much so for adults since we are unlikely to be able to do what he does. Adults are more influenced by movie stars and athletes who model cars, clothes, charitable works, or even environmentally protective behaviors for example. Their “star power” attracts our attention and the modeled behavior may seem doable by us. If it looks good for them, it may benefit us too.

**Cognitive aspects of learning**

A fourth type of learning involves **cognitive processes** of analyzing situations by a combination of observing, reading, or talking to others who have knowledge of the behaviors that lead to outcomes. We are able to take advantage of books and conversations to produce behaviors that earn the reinforcers we desire. We do it because we believe the information and value the outcomes the behaviors might produce. No other animal can do that to the best of our knowledge.

As we go through a day we probably exhibit combinations of previously learned behaviors, acquire new behaviors, and modify behaviors due to new experience. We learn by observing associations, finding that a behavior produces a desired result, observe how another does something and what happens to them, read about interesting things to try, and discuss with others better ways to get things done or to enjoy ourselves. We can even experience vicarious reinforcement by seeing what happens to others on TV and feeling something like they are feeling. Humans are very empathic animals. Empathy has supported our tribal tendencies well, and we are more successful when we can work in groups. We assess the likelihood of behaviors leading to desired outcomes, and the likelihood that we will be able to perform the behavior that will lead to the desired outcome. If any link is missing – the reward, the knowledge of the reward, the knowledge of how to get the reward, the belief that I can actually perform the behavior, and that it will actually lead to the reward for me, or the opportunity to engage in the behavior – I will not bother performing the behavior. Additional barriers to performing the behavior include: being inconvenient; expensive in resources of energy, time or money; the behavior requires me to forego the opportunity to gain another reward that I value more or believe I have a better chance of obtaining; or another behavior of equal value has less cost to me.

**The power of reinforcers in shaping our behavior is well-documented scientifically**

There is so much data supporting the power of these various forms of learning that no researcher attempts to refute it anymore. There are intense arguments however about the extent that reinforcement governs our behavior. Are we bound to behave according the best and most immediate reinforcers available? B.F. Skinner thought so, as described in the Learning chaper of our textbook. This is referred to as "the contingencies of reinforcement" and means we follow the behaviors that will bring us the best outcome, period. Taken to its extreme this school of thought, called behaviorism, describes humans as mechanically controlled by the contingencies of reinforcement. We do not decide how to behave each day, called free will. Rather we scan our environments for the availability of reinforcers and learn the behaviors needed to get them. We can be controlled by what ever controls the contingencies of reinforcement. If this is the forces of evolution, dictators of governments, teachers in the classroom, parents raising us, or prison officials, it makes no difference. We do what we can to maximize our rewards and minimize our punishments. Anyone who gains control of the contingencies of reinforcement controls us. Who controls the controllers? They are controlled by the contingencies they must follow to get what they want. No one behaves spontaneously or by pure freedom of choice, according to this extreme position.

When it comes to the nature-nurture issue, behaviorists are extreme nurture believers, within the limits of biology. We cannot learn to fly without technology, regardless of the reinforcers. However, our personalities, interpersonal behaviors, occupational choices, parenting styles, voting patterns and any other behavior not directly genetically controlled is governed by contingencies of reinforcement. Behaviorism is an American product, reflecting American practical mindedness to fix problems and to make progress as a society. It also supports the position that each generation can become different from the last as we learn what it takes to succeed in the world we were born into. That quality gives humans tremendous ability to adapt to changing environmental conditions. John Watson, the American psychologist known as the father of behaviorism, said that he could create any kind of adult out of any healthy infant buy structuring the contingencies of reinforcement. This reflects American faith in a person being able to take advantage of opportunity to get ahead if the society provides that opportunity. The American Dream involves being able to overcome where ever you start in life by hard work and looking for the best opportunities. But there is another side to this behaviorist position; it denies that we are able to freely choose our own destiny. We are controlled by the contingencies of reinforcement and freedom is an illusion. This does not fit the American ideal of human life.

**Combining the behaviorist and cognitive perspectives to explain our behavior**

**Behaviorism** has been a major force in psychology for most of this century because it is very effective in producing scientific evidence to support its position and to assail other positions that are less rigorous in their research. Few psychologists subscribe to this perspective in its pure form today. Most add the cognitive perspective. The **cognitive perspective** says that we analyze situations and choose our behaviors according to our perceptions of what will led to those things that are most attainable and valuable to us, which may include intangibles we have learned to value like world peace, raising our children to be productive citizens, staying healthy, or fostering healthy environments for future generations. Cognitive theorists have made major in-roads in creating a modified behaviorism in the last 30 years. They have demonstrated with reliable research results that we analyze our behavioral choices and may be able to modify the contingencies of reinforcement to support our own desires that would not be satisfied under existing conditions. We advocate new laws, populations die for revolutionary changes for their offspring, and decide if it's worth the gamble to go to college given the array of costs in money, time, effort, and postponed fun. Some of us decide to go, some decide not to. Sometimes we start and then change our mind upon further appraisal. This certainly looks like making choices, but, true to behaviorism, it does involve analyzing the situations for the best avenues to the desired reinforcers. We still are focusing on "what's in it for me", a basic tenant of behaviorism. Cognitive theorists have demonstrated that the mind can control behavior as evidenced by thinking relaxing thoughts and lowering measured blood pressure and heart rate. This simple finding has big implications for the validity of cognitive theories of behavior.

**Values** describe the importance we attach to aspects of life and influence our choice of behaviors by affecting the power of the reinforcers those behaviors produce. Values are learned early in life, are deeply ingrained resistant to change. They strongly influence our views of world, our goals for the future, and the mount of effort and resources we devote to performing behaviors. We each have individual values that we have acquired growing up in our families like the value of promptness, cleanliness, order, money, privacy, or status. We share some societal or cultural values that are characteristic of a nation like free speech, private property, freedom to criticize leaders, traveling in our own car, owning a home. We may acquire religious values that are taught to us by our religious leaders that would include valuing eternal salvation, helping others, opposing injustice. Some believe that there are universal human values shared by all members of the species such as the importance of children, belonging to a community, a long healthy life. Different individuals acquire different combinations of values that are guides for allocating our energies and resources in life. If I highly value having a family and marriage, I will place a lot of my resources into acquiring and keeping a marriage and family. I will think about it, choose behaviors that maximize my chances of having marriage and family over behaviors that might lead me to something I value less, such as total individual freedom to do what I want when I want and spend my money as I see fit. Values help us rank order our priorities in life for allocating time, money, energy, and they guide decision making.

**Applying cognitive-behavioral psychology to understanding the human role in our environmental issues** (referred to in our textbook as the Social-cognitive perspective).

Environmentalists place high value on preserving healthy ecosystems. Some have this value because their ultimate is healthy humans and they believe the science that says humans are dependent upon healthy ecosystems (homocentrism). Some environmentalists value healthy ecosystems because they value all life forms and believe that humans are ethically and morally wrong to live in ways that harm other species’ well-being (ecocentrism).

In cognitive psychology we talk about **cognitive schemas** which are a set of beliefs and perceptions through which we view our world. Our judgments, emotions and behavior are largely determined by the schemas we use. Chief Seatlh's famous “speech” in 1854 provides a set of beliefs about the earth that form a cognitive schema. Go to this web page if you wish to read about Chief Seathl and his “speech”.

<http://www.ritzlore.net/thegarden/masters/chiefseathl/chiefseathl.htm>

Scroll down the page to the photo of the bald eagle to read the “speech”. As noted on the web site, the actual speech has been paraphrased by a Hollywood writer in the 1970’s to resonate with ecologically sustainable ideas of today. From my perspective of living in Native American communities for 11 years, it seems to represent the cognitive schemas of traditional Native Americans about the earth and the human place in it,. See this web site to read his speech. For our purposes in this assignment, use the “Hollywood version” to illustrate a worldview and cognitive schema.

Cognitive schemas guide behavior and provide the basis for judgments about what is right or wrong, effective and ineffective. I have a schema through which I view kids’ behavior and it guided the way I have related to the four children I helped to raise. For example, I believe kids should have fun, will be noisy in doing so sometimes, need friends and time to be with them, need to obey mostly but also challenge authority at times, need to do well in school but not be perfect, need to grow into responsibility but they will not be perfect in handling it any more than I am. I see the goal being for them to become healthy adults who enjoy life, can handle troubles and disappointments, are honorable and live by a code of ethics they gradually acquired as they grew, contribute positively to their community and so on. That schema keeps me from being too rough on them when they mess up, talk back, get rowdy and noisy at home. If I used a schema that kids should be little adults and that being serious and responsible all the time was the goal, I would judge their behavior more harshly and maybe feel I must straighten them out immediately, and I should see perfect behavior for me to feel I was doing a good job as a parent. But I see the goal as being their becoming the type of person I described above, and I have several years to shape their behavior toward that goal. This leads to avoid getting too worked up or pessimistic when they mess up. It’s a process that emerges overtime and mess-ups are normal for humans. We just want to keep making progress toward the goals; we do not need to achieve them all perfectly today or at 12 years old for example.

Similarly I have a schema through which I view land development, environmental policies, and my own behavior as it affects our ecosystems. This schema consists of a set of beliefs about how humans are part of the earth's ecosystems, how we affect those ecosystems, that those ecosystems can be disrupted by human activity to a point that life as know it may not be able to continue some day. Since I value all life and I value increasing human knowledge and life satisfaction, I have to develop ways to justify human activity on the planet that are ecologically sustainable.

On the other hand, if I believed that the earth's ecosystems were self-sustaining and that humans cannot influence them, I would not wish to restrain human activity that pursues greater human life satisfaction. Why worry? The earth will go on...it says so in the Bible. Humans are here to use the planet and make it productive. So environmental issues have little importance for me with this schema, and I may judge environmentalists negatively if they seem to be blocking my desired behaviors and rewards. But if I accepted the wealth of scientific data that the earth is a cosmically rare and fragile environment that is affected by human activity, and that the Bible commanded humans to be good stewards of the earth and all that is part of it, I would judge human contributions to environmental problems and ecological sustainability in a very different light.

President Bush ardently promoted increased fossil fuel exploration and extraction, including in the Arctic National Wildlife Refuge. He said it can be accomplished with no detrimental effects on the ecosystem, and that it is worth the damage that might be caused to get the fossil fuels for our use. Environmental organizations argued that this are is a pristine wilderness teeming with many species of life that depend upon, and that human activity there is bound to have a detrimental effect on the ecosystem. It is also argued that even if no lasting damage were to occur, we should not invade it because wilderness should be left alone (a value), and we should develop alternative energy sources that are renewable instead of extracting more fossil fuels whose burning contributes the coming disaster of the green house effect. President Bush said that there is no reliable evidence of human contribution to a greenhouse effect.

These two different schemas lead to very different judgments about drilling in the Artic National Wildlife Refuge and other wilderness areas. Different cognitive schemas involve different beliefs about the real world and guide my behavior accordingly. A cognitive schema can be altered by new information that I see as credible, but I will resist it because I want to believe that I understand the world now. Exon might assess the principles described in Chief Seatlh’s speech differently than the Director of the Sierra Club, a large environmentally protective organization.

**Expectancy Value Theory**

Expectancy-value theory explains our decisions about the amount of effort to put forth in attaining a goal, or to avoid any effort toward a goal. The following explanation is quoted from:

Sheppard, J.A.and Taylor, K.M. (1999). Social loafing and expectancy-value theory. *Personality and Social Psychology Bulletin, 25,* (9), 1147-1158.

“Expectancy-value theories typically consist of three components: expectancy, instrumentality, and value (Karau & Williams,1993; Mitchell,1974,1982; Porter & Lawler, 1968; Vroom, 1964). The expectancy component refers to the perception that performance is contingent on effort (i.e., that greater efforts will result in better performance). For example, a student may believe that if he or she works hard, he or she can write a good term paper (high effort expectancy) . Alternatively, he or she may believe that writing a good paper is beyond his or her ability or that the amount of effort that he or she devotes to writing a paper and the quality of the paper that emerges are unrelated (low effort expectancy).

“The instrumentality component refers to the perception that the consequence of the performance outcome is contingent on performance (i.e., that performance will determine the outcome) . In a sense, it also reflects a type of expectation, but an expectation about performance rather than an expectation about effort. In the term paper example, the student may believe that a good paper will receive a good grade and that a poor paper will receive a bad grade (high instrumentality) . On the other hand, the student may view the teacher as capricious and thus perceive no relationship between the quality of the paper and the grade received (low instrumentality).

“The value component refers to how much value or importance the person attaches to achieving the outcome of the performance minus any costs involved. In the term paper example, the student's course grade may depend largely on the grade received on the term paper, thus making the term paper grade important (high value). Alternatively, the term paper grade may have a negligible impact on the student's course grade (low value). Of importance, value does not depend solely on how important or rewarding the person regards the outcome; it also depends on the costs (psychological and material) associated with achieving the outcome (Shepperd, 1993). Thus, outcome value represents the difference between the reward for achieving the outcome and the cost of achieving the outcome. For many events, there are multiple values. There may be value attached to completing a task, such as completing the term paper, independent of any external rewards received for performance.

“When viewed together, effort motivation can be expressed as the product of expectation, instrumentality, and outcome value. Effort motivation in collective settings should be high when people (a) perceive a contingency between their effort and the performance, (b) perceive a contingency between performance and the outcome, and (c) value the outcome (the benefits associated with contributing or achieving the outcome exceed the costs of contributing) . Effort motivation reflects how much effort a person is willing to exert on a task or toward a goal.

“Of importance, effort motivation is a product of the perceived expectancy, instrumentality, and outcome value (Karau & Williams, 1993). The perceptions may only loosely correspond to actual contingencies and value. Moreover, as noted earlier, a given situation may have multiple values and costs each with its own set of expectations and utilities. As a result, the model can lead to actions that are rational to the actor yet appear irrational to observers. For example, a woman may spend an inordinate amount of time working on a task that she realizes she has no hope of successfully completing (the project's effort expectancy is low) or for which any external reward is negligible (outcome value appears low). However, she may devote effort to the task out of a sense of obligation or duty, because performing the task is intrinsically enjoyable, or because important others will notice and supply non-tangible rewards (respect, praise, etc.) for high effort. These outcomes, although valued by the person, may go unnoticed by observers, leading to the conclusion that the person's behavior is irrational.”

Again, to avoid plagiarism, the above quote is from:

Sheppard, J.A.and Taylor, K.M. (1999). Social loafing and expectancy-value theory. *Personality and Social Psychology Bulletin, 25*, (9), 1147-1158.

In addition to the principles guiding behavior outlined in expectancy-value theory, an individual needs to have knowledge of the goal as a possibility, and knowledge of the behaviors needed to get to the goal.

**Cognitive maps** are usually described as a picture of a route through a maze or through a town. However, it is a useful concept to describe how we find our way through a maze of behaviors to a goal. Over time we learn the many behaviors necessary to attain a desired outcome. We assess:

· the likelihood that we will be able to perform the required behaviors,

· the likelihood that the desired behaviors will produce the desired outcome,

· the value of the desired outcome to us,

· and the costs and benefits associated with each of the behaviors required to attain the goal.

We then decide whether or not it is worthwhile to pursue the goal. If we have developed an accurate cognitive map of the behaviors, costs, benefits, and goals, we do well. If our cognitive map is faulty, we may not attain the goal because we did not know the necessary behaviors, could not perform them, chose behaviors that did not lead to the desired outcome, or the costs outweighed the benefits and we dropped out of the pursuit of the goal.

The route we choose to follow on our cognitive-behavioral map of life can be explained, and to some degree predicted by**, “expectancy-value theory**”. For example, you probably want a college degree and you have selected this course as one required set of behaviors on the way to the degree. Remember all the information you sought before deciding to try an online psychology course? Each piece of information contributed to your decision about the likelihood that you could perform what was required, that the outcome would be worth the effort and costs, including time, and that successfully completing the course would move you toward your desired goal of a degree and maybe a four year college program eventually. You did not know all the behaviors necessary to complete the course before starting it. However, now that you are in it, you have developed a more accurate cognitive map of what is required, your ability to produce it, the costs and benefits of doing it. You also have a better estimate of the likelihood that you will finish and get the desired goal of 5 psychology credits that move you closer to your degree and maybe contribute some valuable knowledge and skills along the way.

Earning your degree is a more complex chaining of many of these course-related behaviors together. You have to read, study, write, research, attend class, discuss in class, be prompt with papers, take exams, avoid antagonizing the instructor, postpone fun, sacrifice financially, and more. To even get to college, you had to have a cognitive map of what was required to get into college and to do well. After you graduate you need a cognitive map of finding a job in your preferred area and the behaviors needed to do well in it. If you have sought the right information and believed it, developed the right abilities, acquired the right knowledge, behave the right way on the job, you will do well. If you developed a faulty cognitive map of all these necessary behaviors and their costs, you will not get to your goal.

**Conclusion**

Human behavior that influences environmental problems can be explained and changed using the principles of cognitive-behavioral psychology, and expectancy-value theory in particular. We are not looking at environmentally relevant behavior from the psychodynamic view involving unconscious motives, or from the existential perspective involving the search for meaning in life. We are looking at biological tendencies that influence our values and behaviors, and at the cognitive processes that we use to analyze situations and choose behaviors that will get us what we want in life while helping us avoid what we don’t want. Behavior is changed by changing some aspect of this process. We can’t change biology very well yet, but we can influence societal values over time, educate about behaviors and their effects, change incentives or rewards and punishments, increase awareness of outcomes that were ignored previously, and increase knowledge about conditions that will effect things we care about. This is one of the focuses of Environmental Psychology, the area we are applying in our topic this week. It is also Division 34 of the American Psychology Association. A new term describing this area of study is Conservation Psychology.

**In summary, we have this array of components that shape our behavior and influence the amount of effort we are willing to put forth to attain a goal:**

* Biological tendencies
* Values
* Beliefs about the way the world is or how things work in the world
* Positive and negative feelings about outcomes and conditions for ourselves and for the world
* Perceived reinforcers and punishments with values attached to them to rank their desirability
* Awareness of behaviors needed to attain desired outcomes
* Belief that the behaviors can be performed
* Faith that the desired outcome will actually occur if the behaviors are performed
* Opportunity to perform the behaviors
* Comparison of the positive and negative aspects of performing the behaviors and attaining the desired outcome which includes what must be given up, the amount of effort and resources needed that could be saved or spent elsewhere for other desired outcomes.
* Barriers to the desired behavior that are not readily overcome (e.g. beyond one’s ability, product is unavailable or unaffordable, criticism of peers for engaging in behavior)

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